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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/927.102

08/10/2001

Michael Weber-Grabau

TTI-31000

3815

28584

7590

11/24/2006

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EXAMINER

ROSENBERGER, RICHARD A

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 11/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/927,102

Applicant(s)

WEBER-GRABAU ET AL.

Examiner

Richard A. Rosenberger

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) 66-77 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 66-77 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 66-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al (US 5,766,360) in view of Toprac et al (US 6,304,999) and the acknowledged prior art of the instant specification.

As in the independent claims 66,71, and 76, Sato et al shows a wafer processing tool with a plurality of wafer processing "slots", or stations, with a wafer handler to transport wafers between the stations. One of the stations contains a wafer inspection station (58 in figure 2, for example). There is a data processor to analyze the inspection data and control the processing of the wafer based upon the data (see for example column 5, lines 6-10).

Sato et al does not teach that the wafer inspection tool can be a scatterometry instrument. Scatterometry instruments are known, and it is known to use such scatterometry instruments in a wafer processing when such an instrument is appropriate for the particular inspections being made on the wafer; see Toprac et al (column 4, lines 11-12) and the instant specification, page 4, or example. Such scatterometry is known to use "characteristic optical signatures" in the processing; see the instant specification, the sentence bridging pages 10 and 11, which treats such use of signatures as known in the art, treating the techniques of obtaining and using these

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signatures as so well known no disclosure of to obtain and use them as so well known no particular disclosure beyond mere mention is needed.

Given this known use of a single inspection station to serve a plurality of processing stations, as shown by Sato et al, and the general known use of scatterometry to inspect and control processing (as shown by Toprac et al and in the instant specification), it would have been obvious to use such scatterometry-based inspection and control in conjunction with a plurality of processing stations in a cluster tool of the like in order to obtain the benefits of automatic inspection and control after each processing step without having to remove the wafers from the processing tool.

Both Sato et al and Toprac et al teaches using the measured result to control the processes, Toprac et al in particular teaches both feedback and feed-forward control, and in particular teaches feedback control to “modify the recipe in the manufacturing model 140 *before the processing of the next semiconductor wafer*” (column 7, lines 1-2, emphasis added); see also the teaching that “control parameter modification in the manufacturing tool 320 can be performed *between processing of each semiconductor wafer*, thereby producing a manufacturing lot of semiconductor wafers that are of a higher quality”(column 5, lines 60-67). It would be obvious to use this type of known feedback control in the system of Sato et al in order to obtain the improvement (the “higher quality” of Toprac et al, column 5, line 67) that this feedback control provides. It appears that the only disclosure for the claimed “processing of subsequent wafers” is in the specification, page 20, lines 32-33, which merely mentions that such feedback process control can be done; the specification treats this feedback process control as

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being so well known in the art that no disclosure of how to make and use this claimed feedback processing beyond mere mention is needed for complete disclosure.

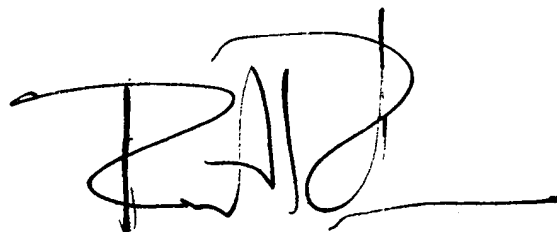
As for claims 67-70, 72-75 and 77, the claimed uses of models, and various manners and arrangements of carrying out scatterometry, appear to be, and appear to be intended to be, presentations of known manners of carrying out scatterometry.

3. The remarks filed 29 September 2006 argue that The Sato et al reference does not teach the claimed feedback control of the process for subsequent wafers. This is treated as well-known in the instant specification, and is taught by Toprac et al (see above), and would have been obvious.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A Rosenberger whose telephone number is (571) 272-2428. The examiner can normally be reached on Monday through Friday during the hours of 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R. A. Rosenberger
20 November 2006



Richard A. Rosenberger
Primary Examiner